



California Energy Commission

# Potential Gaming of SEP Payments by Adjusting Generation Profiles



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# Supplemental Energy Payments and the Market Price Referent

- After a solicitation is closed to new bids, the CPUC calculates and adopts the Market Price Referent (MPR).
  - The MPR is a cent/kWh price, based on the cost to build and operate a proxy power plant, including natural gas costs.
  - The cost is levelized over 10-20 years.
  - The MPR reflects the dividing line at or below which contracts are *per se* reasonable.
- If the final bid price exceeds the MPR, then the generator (seller) may apply for SEPs from the Energy Commission. The IOU provides supporting documentation.
- SEPs may cover the difference between the MPR and the final bid price, subject to caps.



### **Time of Delivery Factors Applied to MPR**

- The MPR adopted by the CPUC is generic for a baseload facility.
- TOD factors reflect varying energy and capacity values of delivery in different time periods.
- The MPR is adjusted to reflect the value of the contract-specific generation profile.
- Assuming contracts have unique generation profiles, the application of TOD factors creates contract-specific MPRs.



# Overview

## Energy Commission Worksheet

The worksheet is used to calculate:

- The levelized final bid price.
- The levelized difference between the contract-specific MPR and the final bid price, if applicable.
- The levelized contract-specific MPR:
  1. Calculate the cost per TOD time period =  
MPR adopted by the CPUC (cent/KWh) \* TOD Factor (for each period)  
\* generation anticipated per TOD period (KWh), over life of contract
  2. Add costs for all TOD periods
  3. Divide total costs for all TOD periods by total generation



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# CEC-SEP Worksheet – Input Page

Facility Name

Solicitation/MPR Year

Contract Start Year

Contract Term

MPR for Contract Start Year (cents/kWh)

WACC (Utility specific)

Purchasing Utility

### TOD FACTORS

UTILITY	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P

### Estimated Annual Sales by TOD Period (kWh)

Contract Year	Start Year	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P
1							
2							
...							



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# CEC-SEP Worksheet – Input Page (cont)

~~Final Bid Price~~  
Annual ~~Contract Price~~ by TOD Period (cents/kWh Nominal)

Contract Year	Start Year	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P
1							
2							
...							

~~Initial Bid Price~~  
Annual Weighted Average ~~Bid Price~~ (cents/kWh Nominal)

Contract Year	Start Year	Avg. Bid Price
1		
2		
...		



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# CEC-SEP Worksheet – Output Page

### INPUTS (Transferred from Inputs Sheet)

Facility Name

Solicitation/MPR Year

Contract Start Year

Contract Term

MPR for Contract Start Year (cents/kWh)

WACC (Utility specific)

Purchasing Utility

### RESULTS

Form Number\*

~~Initial Bid Price~~  
Levelized Bid Price (cents/kWh) over the term of the contract

¢/kWh

7(a)

~~Final Bid Price~~  
Levelized Contract Price (cents/kWh) over the term of the contract

¢/kWh

7(b), (6 on Utility Form)

Levelized above market costs (cents/kWh) over the term of the contract

¢/kWh

8(a)

Total Amount of above market costs (\$) over the term of the contract

\$

8(b)

Levelized TOD-Adjusted MPR (cents/kWh) over the term of the contract

¢/kWh

8(d), (4 on Utility Form)

All prices in 2010 dollars

\*Corresponding form numbers on CEC-RPS-4 (Seller) Form unless otherwise noted (The Utility Form is the CEC-SEP-3 (Utility) Form)



## TOD Factors for IOUs

### PG&E

TOD Period	S Super-P	S Shdr	S Night	W Super-P	W Shdr	W Night	Sp Super-P	Sp Shdr	Sp Night
TOD Factors	1.543	1.024	0.747	1.310	1.065	0.787	1.104	0.920	0.673

### SDG&E

TOD Period	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P
TOD Factors	1.63	1.04	0.88	1.19	1.08	0.79

### SCE

TOD Period	S On-P	S Mid-P	S Off-P	W Mid-P	W Off-P	W S. Off-P
2005 TOD Factors	1.43	1.02	0.85	1.22	0.93	0.78
2006 TOD Factors	3.28	1.28	0.67	1.02	0.85	0.65

S – Summer  
W – Winter  
Sp – Spring





## Assumptions for Analysis

- Solicitation/MPR Year – 2005
- Contract Start Year – 2010
- Contract Term – 15 years
- MPR for Contract Start Year – 6.28 cents/kWh
- WACC (same for all utilities) – 8.18%
- Scenarios conducted using SDG&E TOD factors and SCE's 2005 and 2006 TOD factors.



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### Assumptions for Analysis (cont.)

SDG&E - Bid Price for specified TOD period (cents/kWh)

Contract Year	Average Bid Price	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P
1	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
2	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
3	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
4	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
5	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
6	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
7	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
8	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
9	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
10	7.000	11.4051	7.2800	6.1831	8.3412	7.5530	5.5496
11	6.000	9.7758	6.2400	5.2998	7.1496	6.4740	4.7568
12	6.000	9.7758	6.2400	5.2998	7.1496	6.4740	4.7568
13	6.000	9.7758	6.2400	5.2998	7.1496	6.4740	4.7568
14	6.000	9.7758	6.2400	5.2998	7.1496	6.4740	4.7568
15	6.000	9.7758	6.2400	5.2998	7.1496	6.4740	4.7568



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### Assumptions for Analysis (cont.)

SCE (2005 TOD factors) - Bid Price for specified TOD period (cents/kWh)

Contract Year	Average Bid Price	S On-P	S Mid-P	S Off-P	W Mid-P	W Off-P	W S. Off-P
1	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
2	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
3	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
4	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
5	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
6	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
7	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
8	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
9	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
10	7.000	9.9757	7.1111	5.9682	8.5295	6.5186	5.4320
11	6.000	8.5506	6.0952	5.1156	7.3110	5.5874	4.6560
12	6.000	8.5506	6.0952	5.1156	7.3110	5.5874	4.6560
13	6.000	8.5506	6.0952	5.1156	7.3110	5.5874	4.6560
14	6.000	8.5506	6.0952	5.1156	7.3110	5.5874	4.6560
15	6.000	8.5506	6.0952	5.1156	7.3110	5.5874	4.6560



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### Assumptions for Analysis (cont.)

SCE (2006 TOD factors) - Bid Price for specified TOD period (cents/kWh)

Contract Year	Average Bid Price	S On-P	S Mid-P	S Off-P	W Mid-P	W Off-P	W S. Off-P
1	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
2	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
3	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
4	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
5	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
6	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
7	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
8	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
9	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
10	7.000	22.9600	8.9600	4.6900	7.1400	5.9500	4.5500
11	6.000	19.6800	7.6800	4.0200	6.1200	5.1000	3.9000
12	6.000	19.6800	7.6800	4.0200	6.1200	5.1000	3.9000
13	6.000	19.6800	7.6800	4.0200	6.1200	5.1000	3.9000
14	6.000	19.6800	7.6800	4.0200	6.1200	5.1000	3.9000
15	6.000	19.6800	7.6800	4.0200	6.1200	5.1000	3.9000



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# Generation Profile 1 used in Analysis (Illustrative)

Majority of generation off-peak scenario (kWh)

Contract Year	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P	Total
1	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
2	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
3	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
4	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
5	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
6	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
7	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
8	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
9	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
10	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
11	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
12	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
13	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
14	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000
15	14,000,000	16,000,000	37,000,000	28,000,000	32,000,000	72,000,000	199,000,000



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# Generation Profile 2 used in Analysis (Illustrative)

Majority of generation on-peak scenario (kWh)

Contract Year	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P	Total
1	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
2	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
3	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
4	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
5	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
6	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
7	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
8	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
9	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
10	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
11	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
12	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
13	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
14	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000
15	72,000,000	32,000,000	28,000,000	37,000,000	16,000,000	14,000,000	199,000,000



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# Generation Profile 3 used in Analysis (Illustrative)

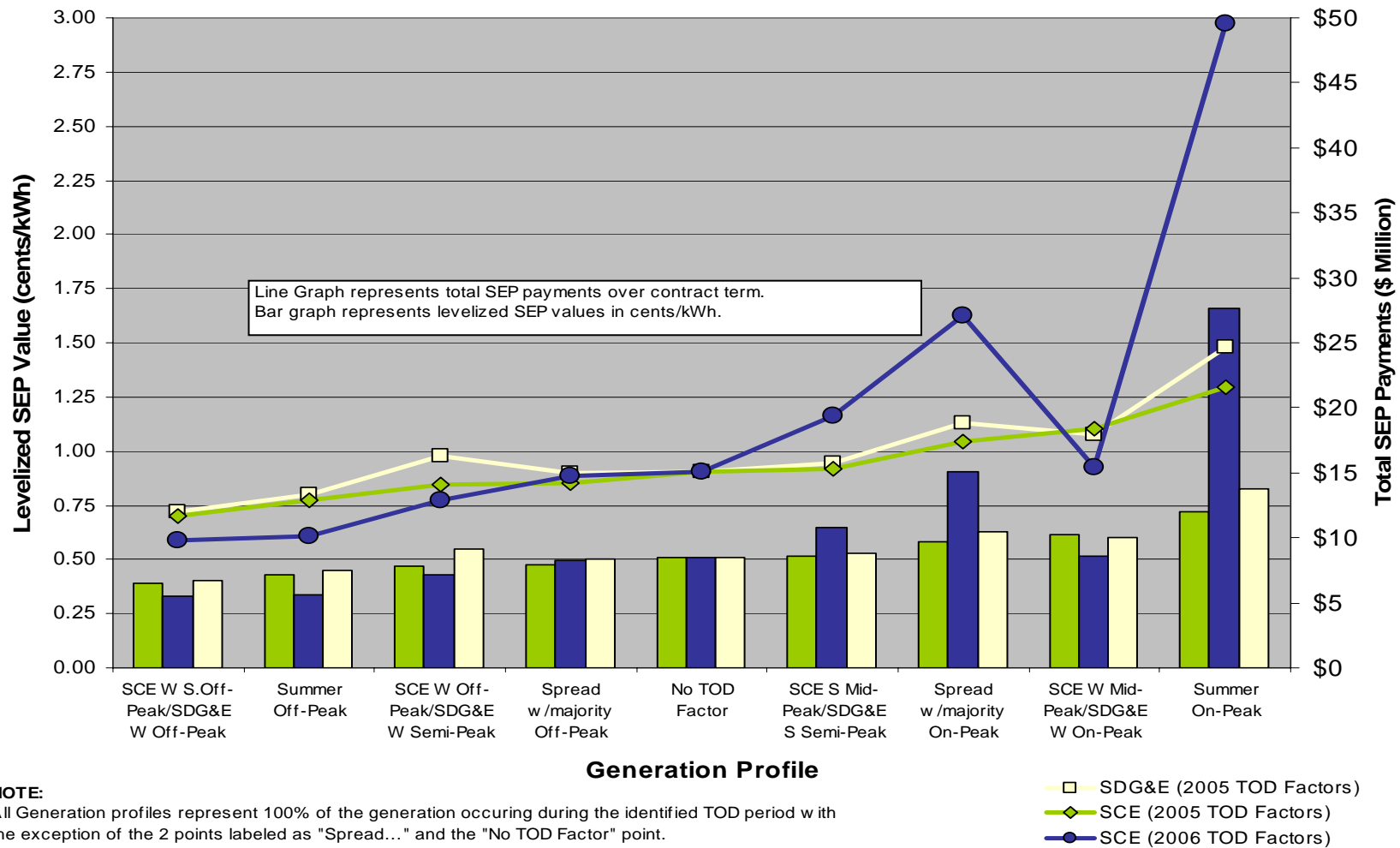
All generation occurring during Summer On-Peak scenario (kWh)

Contract Year	S On-P	S Semi-P	S Off-P	W On-P	W Semi-P	W Off-P	Total
1	199,000,000	0	0	0	0	0	199,000,000
2	199,000,000	0	0	0	0	0	199,000,000
3	199,000,000	0	0	0	0	0	199,000,000
4	199,000,000	0	0	0	0	0	199,000,000
5	199,000,000	0	0	0	0	0	199,000,000
6	199,000,000	0	0	0	0	0	199,000,000
7	199,000,000	0	0	0	0	0	199,000,000
8	199,000,000	0	0	0	0	0	199,000,000
9	199,000,000	0	0	0	0	0	199,000,000
10	199,000,000	0	0	0	0	0	199,000,000
11	199,000,000	0	0	0	0	0	199,000,000
12	199,000,000	0	0	0	0	0	199,000,000
13	199,000,000	0	0	0	0	0	199,000,000
14	199,000,000	0	0	0	0	0	199,000,000
15	199,000,000	0	0	0	0	0	199,000,000



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## SEP Payment Comparison for Various Generation Profiles (Using SDG&E and SCE TOD Factors)







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# SEP Payment Comparison for SDG&E

(Using SDG&E's 2005 TOD Factors)

	Levelized Final Bid Price, TOD-Adjusted (cents/kWh)	Levelized TOD-Adjusted MPR (cents/kWh)	Levelized SEP Value (cents/kWh)	Total SEP Payments over Contract Term
100 % Winter Off-Peak	5.380	4.979	0.40	\$11,978,747.49
100 % Summer Off-Peak	5.994	5.547	0.45	\$13,346,149.92
Spread w/majority Off-Peak	6.722	6.220	0.50	\$14,965,667.06
No TOD Factor Adjustment	6.786	6.280	0.51	\$15,109,419.13
100 % Summer Semi-Peak	7.058	6.531	0.53	\$15,713,795.90
100 % Winter Semi-Peak	7.322	6.776	0.55	\$16,303,063.25
100 % Winter On-Peak	8.086	7.483	0.60	\$18,004,383.84
Spread w/majority On-Peak	8.449	7.819	0.63	\$18,812,699.80
100 % Summer On-Peak	11.057	10.232	0.82	\$24,617,776.60



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## SEP Payment Comparison for Various Generation Profiles (Using SDG&E and SCE TOD Factors)

TOD Period	Levelized SEP Value (cents/kWh)			Total SEP Payments over Contract Term		
	SDG&E 2005 TOD Factors	SCE 2005 TOD Factors	SCE 2006 TOD Factors	SDG&E 2005 TOD Factors	SCE 2005 TOD Factors	SCE 2006 TOD Factors
SCE W S.Off-Peak / SDG&E W Off-Peak	0.40	0.39	0.33	\$11,978,747	\$11,724,909	\$9,821,122
Summer Off-Peak	0.45	0.43	0.34	\$13,346,150	\$12,882,291	\$10,123,311
SCE W Off-Peak / SDG&E W Semi-Peak	0.55	0.47	0.43	\$16,303,063	\$14,070,305	\$12,843,006
Spread with majority Off-Peak	0.50	0.48	0.49	\$14,965,667	\$14,239,355	\$14,710,804
No TOD Factor	0.51	0.51	0.51	\$15,109,419	\$15,109,419	\$15,109,419
SCE S Mid-Peak / SDG&E S Semi-Peak	0.53	0.51	0.65	\$15,713,796	\$15,349,155	\$19,340,056
Spread with majority On-Peak	0.63	0.58	0.91	\$18,812,700	\$17,450,686	\$27,054,212
SCE W Mid-Peak / SDG&E W On-Peak	0.60	0.62	0.52	\$18,004,384	\$18,410,827	\$15,411,608
Summer On-Peak	0.82	0.72	1.66	\$24,617,777	\$21,532,433	\$49,558,895



## California Energy Commission

The background of the advertisement shows a house with solar panels on the roof and a man and a young boy smiling in front of it. The text "Manage your electricity costs" and "Rely on limitless power sources" is faintly visible in the background.

**RENEWABLE  
ENERGY  
PROGRAM**

*Harness The Power All Around Us*

CALIFORNIA ENERGY COMMISSION

Manage your electricity costs  
Rely on limitless power sources

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Harness the Power All Around Us